



☐ EPA/EPO/OEB  
D-80298 München  
☎ +49 89 2399-0  
TX 523 656 epmu d  
FAX +49 89 2399-4465

Europäisches  
Patentamt

European  
Patent Office

Office européen  
des brevets

Generaldirektion 2

Directorate General 2

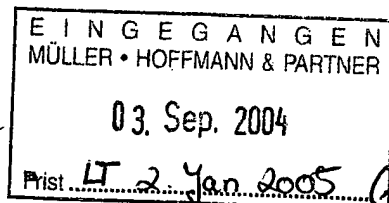
Direction Générale 2

Müller - Hoffmann & Partner  
Patentanwälte,  
Innere Wiener Strasse 17  
81667 München  
ALLEMAGNE

Telephone numbers:

Primary Examiner  
(substantive examination) +49 89 2399-2192

Formalities Officer / Assistant  
(Formalities and other matters) +49 89 2399-2241



Application No. 00 112 308.2 - 2204	Ref. 52521	Date 02.09.2004
Applicant SONY CORPORATION		

**Communication pursuant to Article 96(2) EPC**

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

**of 4 months**

from the notification of this communication, this period being computed in accordance with Rules 78(2) and 83(2) and (4) EPC.

One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (Rule 36(1) EPC).

**Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).**



**BEST AVAILABLE COPY**

HOOGEN R  
Primary Examiner  
for the Examining Division

Enclosure(s): 6 page/s reasons (Form 2906)  
Sensor Vol. 6, page 137, VCH, Weinheim, Germany, 1992.



Datum  
Date 02.09.2004  
Date

Blatt  
Sheet 1  
Feuille

Anmelde-Nr.:  
Application No.: 00 112 308.2  
Demande n°:

The examination is being carried out on the following application documents:

Text for the Contracting States:

DE FR GB

Description, pages:

1-58 as originally filed

Claims, No.:

1-8 as received on 19.05.2004 with letter of 19.05.2004

Drawings, sheets:

1/12-12/12 as originally filed

\*\*\*\*\*

In the first official communication dated 18.11.2003 an objection of lack of novelty of the independent claim was raised. The amendments and arguments filed with letter dated 19.05.2004 were not sufficient to arrive at an independent claim meeting the requirement of novelty, let alone inventive step. Furthermore, most of the clarity objections have not been dealt with.

# **1. Clarity (Art. 84 EPC)**

- 1a. The term "inspection equipment" is very broad and also encompasses separate visible and ultraviolet inspection devices functioning completely independently from each other. The term "inspection equipment" should therefore be replaced throughout the set of claims by the term "wafer inspection apparatus" or "wafer inspection device".

✓

BEST AVAILABLE COPY



- 1b. Claim 1: As already stated in the first official communication with respect to previous claim 3, the terms "the low frequency component" and "the high frequency component" lack antecedence and are therefore unclear. Even if "the" was replaced by "a" these terms would still be unclear, because they do not have a well-defined and generally accepted meaning in the field of wafer inspection. ✓

Furthermore, the functional term "means for projecting an ultraviolet/visible light" is unclear. Does it comprise the light sources or not (see also the comment with respect to claim 2)? It should therefore be replaced by more specific structural apparatus features. ✓

- 1c. Claim 2: As already stated in the first official communication, the passages "the visible light imaging means is connected with a lamp as a light source" and "the ultraviolet imaging means is connected with a laser as a light source" are unclear. "Imaging means" should probably read "projecting means". ✓

Furthermore, since the visible and the ultraviolet light sources are essential for the functioning of the inspection device, these features should be comprised in independent claim 1 (Rule 29(1) and (3) EPC). Claim 4 would then become obsolete. ✓

- 1d. Claim 3: As already stated in the first official communication, the claim specifies method steps and should be recast in terms of apparatus features (e.g., of the type "the processing means is arranged to ..."). ✓

- 1e. Claim 5: The claim repeats what is already specified in claim 2 and is therefore obsolete (see comments made with respect to claim 2). ✓

- 1f. Claim 8: As already stated in the first official communication, the claim specifies the specimen to be investigated and it is not clear which apparatus features shall be thereby implied (Guidelines C-III 4.8a).



## 2. Novelty, inventive step

2a. The following documents are referred to:

D1: US-A-5 479 252

D2: US-A-5 619 429

D3: EP-A-0 582 884

D4: E. Wagner et al. (Eds), Sensors, Vol. 6, page 137, VCH, Weinheim, Germany, 1992.

D1-D3 have already been introduced in the first official communication. A copy of D4 is attached to this communication.

### 2b. Novelty (Art. 54(1), (2) EPC)

Document D1 discloses a wafer inspection apparatus comprising:

an inspection stage (cf. fig. 2, ref. signs 216-218,224) for supporting a wafer and moving it to a predetermined inspection position (cf. column 5, line 51 - column 6, line 3);

an argon ion laser (210) providing up to six different wavelengths of light in the ultraviolet and visible spectral range (cf. column 6, lines 29-31; D4) and connected to an ultraviolet and visible light optical system (202-205,207-211) for projecting ultraviolet or visible light onto the wafer, said optical system comprising selecting means consisting of a computer controlled filter wheel containing notch filters (202) for selecting a particular ultraviolet or visible laser line (cf. column 6, lines 48-52);

ultraviolet and visible light imaging means (203-205,207-212) for detecting ultraviolet or visible light projected onto the wafer and reflected therefrom and for picking up an ultraviolet or visible image of the wafer (cf. column 6, lines 8-14);

imaging means (213) for processing and analysing the images picked up by the ultraviolet and visible imaging means (cf. column 8, lines 36-42), the ultraviolet image being processed to inspect the wafer with a high resolution and the visible image being processed to inspect the wafer with a low resolution (cf. column 4, lines 1-7).

BEST AVAILABLE COPY



Thus, D1 anticipates all technical features of independent claim 1, which is therefore not allowable (Art. 52(1) EPC).

D1 also anticipates the additional technical features of the following dependent claims:

Claim 4:

specimen placing mechanism and specimen supporting means provided in a dedusting clean unit: cf. column 4, line 58 - column 5, line 25.

Claims 5 and 6:

ultraviolet laser emitting light having a wavelength of less than 355nm: cf. column 6, line 30 (argon ion laser).

Claim 8:

patterned semiconductor wafer: cf. column 5, lines 56-58.

**2c. Inventive step (Art. 56 EPC)**

In addition to the laser imaging system discussed in the previous paragraph, the device of D1 includes a white light imaging system comprising a microscope illuminator (220) and a video camera (219). Selecting means are provided to produce the microscope image alone or simultaneously with the laser image (cf. column 10, lines 32-37). Thus, when identifying the white light imaging system of D1 with the visible light projecting/imaging means of claim 1 (as in the first official communication), the device of claim 1 essentially differs from the disclosure of D1 in that the visible image is processed and analysed by image processing means, whereas in D1 the microscope image is displayed on a display for inspection by an operator.

However, as already stated in paragraph 2c of the first official communication, this feature falls within the normal range of design options envisaged by the person skilled in the field of wafer inspection.

Dependent claims 2, 3 and 7 do not contain any additional features which, in

**BEST AVAILABLE COPY**



combination with the features of any claim to which they refer, meet the requirements of the EPC with inventive step, the reasons being as follows:

Claims 2:

ultraviolet laser: D1 (cf. column 6, line 30: argon ion laser);

white light lamp: D1 (cf. column 10, line 3: microscope illuminator).

Claim 3:

imaging/comparison of different areas of the specimen: D1 in combination with D2 (cf. column 10, lines 42-47).

Claim 7:

solid state ultraviolet laser: D1 in combination with D3 (cf. page 9, lines 42-54).

**3. Formal deficiencies**

Merely for the sake of completeness, the following formal deficiencies already stated in the first official communication are repeated:

- 3a. Contrary to the requirements of Rule 27(1)(b) EPC, the document D1 is not identified in the description, nor is its relevant content indicated.

Furthermore, the description is not in conformity with the claims (Rule 27(1)c) EPC).

- 3b. Contrary to the requirements of Rule 29(1) EPC, the independent claim is not in the two-part form.

It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable, an independent claim should be filed taking account of Rule 29(1) EPC. The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.



Bescheid/Protokoll (Anlage)

Communication/Minutes (Annex)

Notification/Procès-verbal (Annexe)

Datum  
Date 02.09.2004  
Date

Blatt  
Sheet 6  
Feuille

Anmelde-Nr.:  
Application No.: 00 112 308.2  
Demande n°:

In order to facilitate the examination of the conformity of the amended application with the requirements of Article 123(2) EPC, the applicant is requested to clearly identify the amendments carried out, irrespective of whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based.

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.

\*\*\*\*\*

BEST AVAILABLE COPY